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(54) **Coated cemented carbide endmill having hard-materials-coated-layers excellent in adhesion**

(57) A coated cemented carbide endmill, comprising a tungsten carbide based cemented carbide substrate having a composition of 5 - 20 wt% of Co as a binder phase forming component, when necessary, 0.1 - 2 wt% of one or two of Cr and V as the binder phase forming component, 0.1 - 5 wt% of one kind or more kinds of carbides and nitrides of Ti, Ta, Nb and Zr as well as two or more kinds of solid solutions thereof as a dispersed phase forming component and the balance being tungsten carbide as the dispersed phase forming component and inevitable impurities, wherein the tungsten carbide has a refined particle structure having an average particle size of 0.1 - 1.5 μm , the tungsten carbide based cemented carbide substrate has a surface layer formed to the surface portion thereof which is formed by being heated at a high temperature and in which composite carbides created by the reaction of Co

and W are distributed over a depth of 0.1 - 2 μm from the uppermost surface at the cutting edge thereof and further the cemented carbide substrate has hard-material-coated layers composed of a Ti compound layer and, when necessary, an aluminum oxide layer formed thereto in an average layer thickness of 0.5 - 4.5 μm , the Ti compound layer being composed of one or more layers of a Titanium carbide, Titanium nitride, Titanium carbo-nitride, Titanium oxy-carbide, Titanium oxy-nitride and Titanium oxy-carbo-nitride formed by medium temperature chemical vapor deposition and the aluminum oxide layer being formed by medium temperature chemical vapor deposition or high temperature chemical vapor deposition. With this arrangement, there can be provided a coated cemented carbide endmill having hard-material-coated layers excellent in an adhesion.

EP 0 900 860 A3



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EUROPEAN SEARCH REPORT

Application Number
EP 98 11 5877

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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 25 September 2002	Examiner Joffreau, P-0
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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